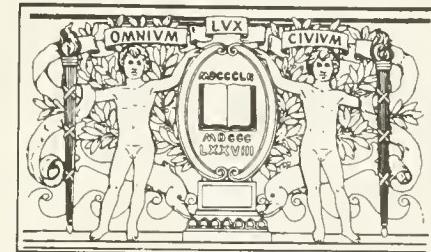


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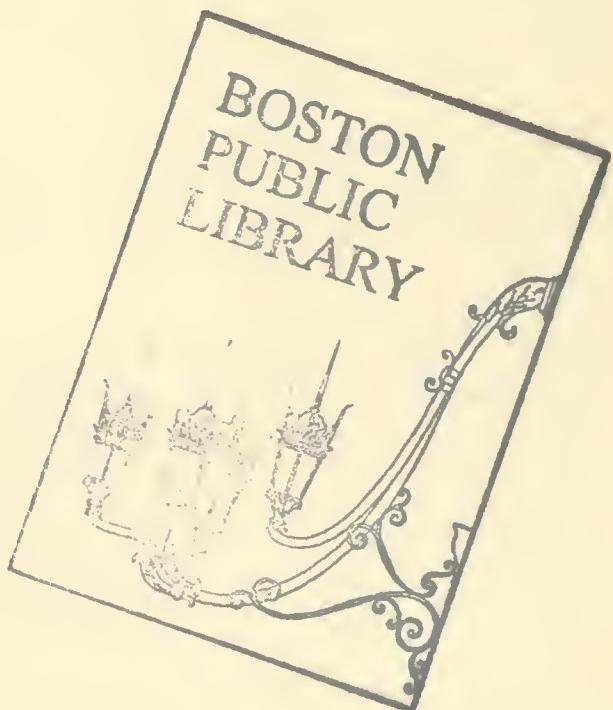
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THE IMPACT OF ALTERNATIVE POLICIES ON THE DOWNTOWN CROSSING

a Final Report for the Boston Redevelopment Authority

by Karla H. Karash

Dec. 6, 1982





1. Overview

This report is part of the economic analysis for the Boston Redevelopment Authority's (BRA) study of the Downtown Crossing (DTC). It covers the results and analysis of a two part shopping survey carried out jointly by the BRA and Massachusetts Institute of Technology (MIT). Funding for the phone survey was provided by the Urban Mass Transportation Administration, and funding for the mail survey was provided by the Environmental Protection Agency through the Washington Council of Governments. Throughout the course of this study the author has been considerably aided with insightful and creative contributions from Mathew Coogan and Barry Abramson of the BRA, Melvin F. Levine of Melvin F. Levine and Associates, Donald W. LeClair and Joe L. Stewart, of LeClair-Stewart Associates, Theodore M. Amenta, of Halcyon, Ltd, and William Loudon of MIT. The content of this report is the responsibility of the author alone and is not meant to represent the policies or opinions of the sponsoring agencies.

The two part survey included both a phone survey of 1894 households selected randomly within the 128 area and a followup mail survey of 562 households. One of the purposes of the phone survey was to gather information on where and how often households choose to shop. This information was used to help calibrate a very detailed gravity model for shopping which has been implemented on the City Hall computer.

A second purpose of the phone survey was to find respondents willing to answer the mail survey and to determine where these respondents shopped most. The mail survey was then tailored to ask questions about both the Downtown Crossing and the most used alternative area.

The quality of the data collected in both surveys seems excellent. The characteristics of the mail survey respondents match closely the characteristics of Downtown Crossing shoppers. Nearly 70 percent of the mail respondents carefully completed the long and somewhat complex survey.

The mail survey asked respondents to rate the Downtown Crossing as it is today and as it might be if certain changes were made. Changes considered were making it cleaner, more secure, adding a high fashion department store or a national chain department store, adding parking, and allowing automobiles back on Washington Street which is currently a pedestrian mall. Respondents rated all of these changes by indicating on a 7 point scale how good the DTC would be in terms of the quality of its goods or stores, the variety of its goods or stores, the value offered for the money, the parking situation, and the walk environment.

Respondents also rated the shopping area which they said they shopped at most (other than the DTC), and indicated how much they preferred it compared to the DTC.



In order to forecast changes in the DTC market due to the various policies, simple regression models were estimated to show how the policies affected the ratings of the DTC on quality, variety, value, parking, and the walk environment. Another regression model was used to show how much the DTC was preferred over the alternative shopping area (or vice-versa) based on the rating scores of the existing DTC and the most used alternative shopping area. The preference measure in this model is analogous to the attractiveness measure used in the gravity model. Finally a share model similar to the gravity model was estimated to predict the shopping area which the respondent last visited as a function of the preference for the area divided by a function of the time it takes to reach the area.

Most all of the models performed very well. This means there is a much greater chance of properly predicting each respondent's preference and/or last area visited with the models than with an educated guess based on overall market shares.

The same models worked very well for downtown Boston workers and for all other respondents. The main difference in these two groups was that the workers came much more frequently to the DTC than the other respondents. Because the workers already come to the DTC often, it is more difficult to increase their number of trips per month on a percentage basis than it is to increase the number of non-worker trips.

Based upon the models the most favored change for the DTC would be the addition of a high fashion department store such as Neiman Marcus, Saks, or Bloomingdales. Next would be the addition of a national chain department store such as Sears or Penney's. Improved maintenance and improved security follow in importance. Allowing automobiles back on Washington Street would have a very negative effect on the DTC market share.

A question of interest is the effect of Copley Place on the DTC. Currently 26% of DTC customers sometimes shop in the Back Bay. Assuming these are the DTC customers who would also be attracted by Copley Place, the loss in market share for the DTC can be estimated as around 2 or 3%.

The models can be used to estimate the sales increases for the DTC given different development and management scenarios. Because the models are based upon the opinions and behavior of current customers of the DTC, predicted increases in sales do not include an estimate for new customers who might be attracted to the area. Thus the increases in sales estimated for development scenarios like the addition of new department stores can be regarded as minimums. Based upon existing customers only, addition of both a high fashion department store and a national chain department store is predicted to increase DTC sales by 11 percent over that predicted for the DTC with the Lafayette Place Development. A high level of maintenance and security is expected to increase sales by 6 percent.

2. Description and Evaluation of the Survey

The objective of the sampling design for the phone survey was to obtain a sample which would be representative of all households within the Route 128 market area. Households were to be drawn randomly from the phone books. In order to insure that the sample was appropriate for each city, town, and Boston planning district, quotas were set for successful interviews proportional to the number of households in each community.

Overall, the response to the phone survey was excellent. Table 1 shows the results, and table 2 shows response rate by community. Out of 2660 attempted calls made before July, 1982, 64% were interviewed successfully. In the suburban areas, only Winchester and Lexington had particularly low rates of response. Additional phone calls were made in these communities in July in an attempt to reach quota. Another problem was that neighborhoods such as central Boston, Roxbury, and Allston/Brighton were under-represented. Additional phone calls were thus made in Boston in August. Table 3 shows the final number of successful phone interviews by community and the desired quotas.

Each phone respondent who had visited the Downtown Crossing in the last year and who could name one other shopping area that they visited was asked if they would be willing to complete a mail questionnaire. Table 3 shows the percent of respondents by community who were eligible and who agreed to take the mail questionnaire. The overall response rate of 71% was much higher than the expected response rate of 50% which is based upon the number eligible as determined by a Globe market survey.(1) A number of suburban communities had particularly low rates of agreement. These included Woburn, Winchester, Malden, and Lexington.

The overall response rate to the mail survey was 41% of all those agreeing to take the survey. Table 4 shows the response rate by community. In this case the response was less than the desired goal of 50%, although a quota of 500 surveys was met. Table 4 shows the variation in response by community.

On the whole, the survey respondents appear to be highly representative of the customers of the DTC. Table 5 shows characteristics of the survey respondents weighted by the number of visits in three months to the Downtown Crossing and corresponding characteristics of pedestrians found in the DTC. The MIT/BRA respondents have a higher percentage of females than all shoppers found in the DTC, a result of having asked to speak to the person who does most of the shopping for the household. The breakdown by residence, time of last trip, and employment location are very similar. Lower income shoppers and the youngest age group (16 to 24) are under-represented in the MIT/BRA survey. The request to speak to the person who does most of the shopping and the fact that dorms were not surveyed probably account for the under-representation of the younger age group.

The data from the surveys appears to be of a very high quality. Nearly 70% of all respondents completed all of the somewhat complex evaluations of alternative policies for the DTC. Respondents were asked a number of questions several different ways and generally, there was high degree of consistency in their answers.

3. Summary of Survey Findings

This section will describe the survey results averaged for all mail respondents. Because all mail respondents had visited the Downtown Crossing in the last year, they represent current customers of the area. All shoppers who have not shopped in the Downtown Crossing in the last year are therefore left out of this summary and all of the following analyses of the data. The justification for this approach is that the Downtown Crossing is much more likely to get existing customers to visit more often than it is to draw customers who never shop there. There are exceptions to this rule which should be noted. First, the parking situation in downtown Boston is perceived as being extremely bad. This finding has been documented in a number of surveys in addition to the one done for this study.(2,3) Thus a parking improvement of significant magnitude might be expected to draw the people who don't currently come because of parking.

A second reason that new customers might come to the Downtown Crossing is to visit a store which is not generally available at the larger suburban malls. A Bloomingdales or a Fenneys, for example, might be expected to bring in new people because these stores are not found in most of the suburban malls. We can expect therefore that actual increases in patronage due to improved parking or to new department stores will be greater than that predicted for current customers which are the basis for the following analyses.

Respondents for the mail survey rated the DTC as a fairly good place to shop. 28% of the respondents mentioned they liked the variety of goods and stores available in the DTC, and 29% mentioned they liked its convenient location. 25% liked the amenities in the DTC including the pedestrian street, benches, and so forth. Respondents least liked the crowds in the DTC (21% of all respondents), about 16% mentioned they felt unsafe or they disliked seeing bums in the area, and 12 % mentioned auto and parking related problems.

The phone survey provides a picture of how frequently respondents visited the DTC. Table 6 shows the results broken down by work and home location. Downtown workers shop over twice as frequently in the DTC as other respondents.

The major competitors with the DTC are the big suburban malls. Table 7 shows for respondents who have shopped in the DTC in the last year, the shopping area where most shopping is done. For those who named the DTC, the second most used shopping area is used in deriving the table. Nearly half of the respondents name either South Shore, Chestnut Hill, or the Burlington Mall as the area they visit most other than the DTC.

The pattern of usage of the DTC is very different from that for the most used alternative mall. Respondents shop in the DTC most on weekdays, while the majority of trips to the alternative area

are on weeknights or on Saturday. Less than a fifth of the respondents drive to the DTC, while nearly four fifths drive to the alternative area. 61% of the respondents said they shopped alone when they were last in the DTC while 63% shopped with other adults or children on their last visit to the alternative area. Table 8 shows these differences and also shows the types of goods purchased in each area.

Table 9 shows background social-economic characteristics of the survey respondents. Note that this table is not weighted by trip frequency and thus differs from table 5.

4. Determining the Impact of Policies on the DTC Market

Respondents of the mail survey were asked to rate the Downtown Crossing and their alternative shopping area on a number of key characteristics. These characteristics were:

1. Quality - Quality refers to the prestige and quality of the stores; the existence of fashionable and quality merchandise; and the service provided by the stores.
2. Variety - Variety refers to the number and variety of stores; and the number of brands, styles, and sizes available.
3. Value - Value refers to the value of goods available in the area; existence of good buys, sales, and promotions; good value for the price.
4. Parking Convenience - Parking convenience refers to the availability of parking spaces, safety of the parking areas, reasonable cost of parking, and parking conveniently located.
5. Attractiveness of the Walking Environment - Attractiveness of the walking environment refers to the general surroundings in the streets and transit stations; the extent to which shoppers are separated from traffic; the safety of the area, the cleanliness of the area, and the general feeling of enjoyment from being in the area.

Respondents rated the DTC and the alternative area on these characteristics using a 7 point scale ranging from unusually high to very low. The rating scales appeared as follows:

Rating for Downtown Crossing
(circle your answer)

	UNUSUALLY HIGH					VERY LOW	
1. Quality	+++	++	+	0	-	--	---
2. Variety	+++	++	+	0	-	--	---
3. Value	+++	++	+	0	-	--	---
4. Parking Convenience	+++	++	+	0	-	--	---
5. Attractiveness of Walk Environment	+++	++	+	0	-	--	---

Table 10 shows a ranking for some of the alternative shopping areas and the DTC on the characteristics of quality, variety, value, parking and walk environment. Generally, the DTC ranked in the middle for quality, variety, and value, and near the bottom on parking and walk environment. Note that while all respondents rated the DTC, different sets of respondents rated each other area. Table 10 should thus be interpreted as an indication of rank rather than a strict order. That is while rank order of shopping areas which are a long way apart in the rankings is probably meaningful, rank order for shopping areas which are adjacent in the rankings is probably not meaningful.

Respondents also indicated how much they preferred the DTC over the alternative (or vice-versa) by dividing 100 points between the two areas. This preference rating is analogous to the "attractiveness" of an area, which in the gravity model is the square feet of retail space times a quality factor. Table 11 shows overall ranking for the shopping areas given average point scores.

In order to determine how respondents' ratings of the DTC and the alternative area related to the preference scores, a simple regression model was estimated. This model tells how important the different characteristics are in an overall evaluation of an area. The regression is a statistical process which provides the best guess of preference point differences between the DTC and the alternative area given rating scores for both areas. Table 12 shows the regression results. The regression coefficients indicate the relative importances of the different characteristics. Quality, variety, and value are all quite important, and walk is somewhat less important than these. For DTC customers parking does not appear to be very important. This is fortunate since these same customers rate the DTC parking extremely low. Downtown workers don't need parking for shopping and around 90% of the non-work related customers come by transit or walk to the DTC.(4) It is important to note that all of the survey respondents are current customers of the DTC. There may be many people who do not shop in the DTC because of the parking situation.

The regression model in table 12 can be interpreted using the following example: A respondent rated the DTC and Chestnut Hill Mall. She rated the Chestnut Hill Mall 2 points better on quality and a point lower than the DTC on variety and value. For parking Chestnut Hill was rated 3 points better than the DTC, and it was rated 1 point better on walk environment. The regression model gives the best guess of the number of preference points given to the DTC less the points given to the Chestnut Hill Mall for this respondent.

Constant	-5.05
Quality	6.03 * -2 = -12.06
Variety	5.88 * 1 = 5.88
Value	6.91 * 1 = 6.91
Parking	0.68 * -3 = -2.04
Walk	3.82 * -1 = -3.82

$$\text{DTC pts.} - \text{Chest. Hill pts.} = \frac{-5.05}{-----} - 10.14$$

This would imply that the respondent gave Chestnut Hill Mall around 55 points and the DTC around 45 points out of 100 total.

The respondents were also asked which of the two areas they last visited. Actual visits to the area are directly related to the attractiveness of the area which is measured by preference points, and visits are inversely related to the time it takes to get there. A model which is a special form of the gravity model was estimated to determine the relative effects of preference and time to reach the area on actual shopping behavior. A formula derived from the model can be used for predicting changes in market share given the existing market share and any change in preference points. The formula uses exponentials which can be computed on most scientific calculators.

The formula for new market share is as follows:

let $Q = \text{DTC share} * \exp(.02 * \text{change in pref point difference})$.

$$Q$$

$$\text{The new DTC share is } = \frac{Q}{Q + (1 - \text{DTC share})}$$

As an example of the use of the formula, say that because of better maintenance, the respondent in the above example now gives 47 out of 100 points to the DTC and 53 out of 100 to the Chestnut Hill Mall. Now there is a six point difference between these areas, which is 4 points less than the previous difference. The change in preference point difference is therefore 4 points. Currently respondents choose the DTC 30% of the time and the most used alternative area 70% of the time. According to the formula the new market share of the DTC would be:

$$\text{New DTC share} = \frac{.30 * \exp(.02*4)}{.30 * \exp(.02*4) + .70} = .32$$

This is about a 7 % increase in market share.

By combining the regression model and the above market share formula, the effect of changes in ratings for the DTC relative to other shopping areas on market share can be computed.

Another task that respondents of the mail survey performed was to rate the DTC assuming changes were made. As before, they rated the DTC on the characteristics of quality, variety, value, parking, and walk environment. The changes which they rated were as follows:

1. Improved maintenance so that the DTC is as clean as the Quincy Market.
2. Addition of a large parking garage so parking is readily available within two blocks of the DTC at a cost of 50 cents per hour.
3. Improved security so police presence is highly visible.
4. Automobiles allowed back on Washington Street.
5. Addition of national chain department store such as Penney's or Sears.
6. Addition of a high fashion department store such as Neiman Marcus, Saks, or Bloomingdales.

In order to determine how the various policies listed above for the DTC affect the ratings given by respondents, regression models were estimated to predict rating changes for quality, variety, value, parking, and walk environment given implementation of the above policies or combinations of policies. Table 13 shows the rating changes for each characteristic given the implementation of relevant policies.

As an example of the use of this table, consider the effect of increased security on the ratings. Increased security will affect the walk environment and the parking convenience. Table 13 shows that increased security will increase the DTC walk rating by 0.64 and the parking rating by 0.26. These rating changes will affect the preferences and the market share of the DTC. Using table 12 and table 13 the change in preference points between the DTC and the most used alternative can be computed as follows:

$$\begin{aligned}\text{preference change due to parking} &= 0.66 + 0.26 = 0.18 \\ \text{preference change due to walk} &= 3.82 + 0.64 = 2.44 \\ \text{total preference change} &= 2.62\end{aligned}$$

The new market share will be:

$$\frac{.30 + \exp(.02*2.62)}{.30 + \exp(.02*2.62) + .7} = .31$$

or a 3 % increase.

Differences Between Downtown Workers and Others

In analyzing the effect of different policies it is important to separate those who are workers in downtown Boston from all others. Therefore the above models were estimated separately for workers and for all others. In fact, there was no significant difference between the way that workers rated the DTC, their most used alternative, or the hypothetical changes for the DTC. Similarly there was no significant difference in the way that workers assigned preference points among the shopping areas. The main difference was the current market shares for workers versus all others. Workers said they visited the DTC 66 % of the time and the alternative mall 34 % of the time. Others visited the DTC 36 % of the time and the alternative area 64 % of the time. Obviously, shopping in the DTC is very convenient for nearby workers. Because workers already visit the DTC frequently, it is more difficult to increase the DTC market share for them than it is for other shoppers. In all of the following analyses, therefore, changes in worker shares are computed separately from changes in shares for all others.

Summary of Changes Holding All Else Constant

Table 14 shows the percentage change in DTC market share expected for workers and all others due to various policy changes in the Downtown Crossing. The largest increases in market share come from adding a high fashion department store; the second largest come from adding a national chain department store; the third, from making the area cleaner; the fourth from adding security; and the fifth from adding parking. Allowing automobiles back on Washington street has a very negative effect. All numbers are rounded to the nearest percentage, but generally the effect for workers is around half of the effect for other shoppers.

Table 15 shows the percentage change in DTC market share expected for various development and management scenarios. Better maintenance and security will increase trips by about 5 % for workers and 8% for others. Addition of a high fashion department store will bring about a 8 and 14 % change for workers and others, respectively. Addition of a national chain department store will bring about a 5 and 11 % change from workers and others. All improvements considered together will bring about a 15 and 33 % change in workers and other shoppers, respectively. Note again that these increases are based on existing customers and do not include an estimate for new customers who might be attracted to the area.

5. The Impact of Copley Place

Of the workers who currently shop in the DTC, about 35% shop some in the Back Bay. Of all others who shop in the DTC, about 22% shop some in the Back Bay. If the assumption is made that these are the customers most likely to be attracted by the Copley Place development, then an estimate can be made of the impact of that development on the DTC.

The questionnaire did not specifically ask about the effect of adding a high fashion department store to the Back Bay, but it did ask the question about the DTC. We can expect that the improvement in quality due to a store like Neiman Marcus will be much greater for the DTC than for the Back Bay which already has a Saks. Thus the change in quality will be, at most, the change indicated for the DTC. On the other hand, a high fashion department store would not improve the DTC quality more than the same store would improve the Back Bay. Thus a lower bound on the improvement in quality in the Back Bay due to a high fashion store is the difference between the current Back Bay quality rating and the quality rating of the DTC with a high fashion store.

A similar procedure can be used to compute an upper and lower bound on the improvement in walk conditions in the Back Bay given the improved maintenance and security in Copley place. An assumption is also made that Copley Place does not change the variety or value rating for the Back Bay. Copley Place will provide parking for its own customers, but will not greatly change overall parking for the Back Bay. Thus the change in parking rating is assumed to be zero.

Other information needed to compute the impact of Copley place is the current market split between Back Bay and the DTC. This information is available from the trip frequency responses in the phone survey. Back Bay's share of the trips taken to either DTC or Back Bay in three months was 42% among those respondents who did shop in the Back Bay. This was true for both workers and all others.

Given this information on ranges of rating changes and existing market shares, the change in Back Bay and DTC markets can be computed. The result is a range of between 1 and 5 % loss in market share of downtown workers due to Copley, and a range of between 0.7% and 3% loss in other shoppers due to Copley. A midrange estimate of the loss would be 3% for workers and 2% for other shoppers.

6. The Impact of Lafayette Place

Because Lafayette Place will be built before any new department stores in the DTC, it is important to assess its effect on DTC sales and on the impacts predicted for different department stores. Results from the survey show that the addition of a high fashion department store and a national chain department store are very complementary to the DTC. The high fashion department store makes a big improvement in the quality rating of the DTC and the national chain department store makes a big improvement in the value rating. Both stores improve the variety rating for the DTC.

The improvement in ratings for the DTC due to both stores can be compared with ratings of alternative shopping areas. With both stores added, DTC quality would be increased so that only the Chestnut Hill Mall and the Back Bay with Copley Place rate higher. The DTC would have the top rating for variety and value. It is unlikely, therefore, that the ratings can be improved much beyond the improvement due to the addition of both a high fashion department store and a national chain department store. What Lafayette Place will do is make a partial improvement in the ratings in advance of the department stores. Table 16 shows rating improvements for quality, variety, and value, assuming Lafayette Place is responsible for one third of the maximum improvement, and that the department stores are responsible for two thirds of the improvement. Lafayette Place is also expected to improve the parking rating to 50% of what was estimated in the survey. This is because the parking fee is likely to be higher than 50 cents/hour. Since new department stores would probably require that additional parking be available as part of their sites, no negative rating is included for parking due to the addition of new department stores.

7. Summary of Impacts Given Different Development and Management Scenarios in 1990

There are a number of changes expected to help retail in the DTC in the next decade. There will be a 18% growth in downtown employment, with higher rates of growth in the CBD. Close in neighborhoods of Boston are expected to continue to increase in population, and incomes in these neighborhoods are expected to grow faster than the average in the metropolitan area. Boston Redevelopment Authority projections indicate a leveling off of the decline in population and a real per capita income growth in Boston's other neighborhoods and in adjoining close in communities. When these changes and other changes such as the addition of Copley Place are input into the BRA gravity model, a base estimate of 1990 sales volume in the DTC can be obtained. This estimate is then increased by 7.5 percent to account for the attraction of new customers to the DTC due to the Lafayette Place parking garage. Recall that new customers are left out in the rest of the analysis which is based upon existing customers of the Downtown Crossing. The final estimate for 1990 is sales of around 479 million dollars in the DTC in 1982 constant dollars. This represents a 28 % increase over the 373 million dollars in sales estimated for the DTC in 1982.

Table 17 shows the additional sales volume expected for the DTC in 1990 given Lafayette Place, a high fashion department store or a national chain department store or both. Rating changes in table 16 were used to compute table 17. Table 17 also shows the sales volume expected for a high level of security and maintenance. The development of both a high fashion department store and a national chain department store would be expected to increase sales volume over that for Lafayette Place by a minimum of 58 million dollars which is an increase of 11 %. This increase does not include any estimate of sales due to new customers coming to the DTC who would be attracted by the new department stores. A high level of maintenance and security would increase sales volume over that for Lafayette Place by 31 million dollars which is an increase of around 6 %.

References

1. Unpublished Boston Globe market share tables from surveys taken in 1977 and 1979.
2. Research Analysis Corporation, "A Segmentation Study on Transportation in the Boston Area", conducted for the MBTA, 1978.
3. Karash K., "An Attitudinal Survey of Pedestrians in Boston's Downtown Crossing", unpublished paper, 1980.
4. Abramson, B., unpublished tables of Downtown Crossing pedestrian characteristics, Boston Redevelopment Authority, September, 1981.

Table 1

Overall Response Rate to Phone Survey

Total Calls as of July, 1982	2660
% Taking Phone Survey	64.2
% No Answers	16.1
% Not in Service	3.9
% Refused or Terminated	10.6
% Busy	5.0

Table 2

Phone Response Record As of July 1, 1980

Town	Attempted Calls	% Successful Calls
Melrose	77	64
Cambridge	189	66
Watertown	63	60
Wakefield	49	61
Boston	845	70
Brookline	129	59
Winthrop	43	60
Revere	137	53
Stoneham	70	61
Woburn	53	58
Winchester	19	37
Medford	113	60
Malden	83	61
Everett	66	53
Chelsea	34	59
Lexington	18	50
Waltham	80	60
Arlington	73	68
Belmont	35	71
Newton	149	64
Dedham	39	69
Milton	55	60
Quincy	151	63
Somerville	87	72
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Total	2657	64

Table 3

Phone Quota and Agreement to Take Mail Survey (Oct)

Town	No. Phone Interviews	Quota	% Agreeing to Mail
Melrose	49	26	57
Cambridge	125	98	70
Watertown	38	32	79
Wakefield	30	21	57
Brookline	74	58	64
Winthrop	27	18	63
Revere	73	41	59
Stoneham	43	18	26
Woburn	31	30	55
Winchester	31	17	16
Medford	65	49	92
Malden	51	51	25
Everett	34	35	76
Chelsea	20	25	75
Lexington	38	23	39
Waltham	44	50	84
Arlington	50	45	80
Belmont	22	24	91
Newton	94	69	70
Dedham	26	20	88
Milton	33	20	82
Quincy	97	82	82
Somerville	63	74	71
East Boston	30	33	80
Charlestown	73	14	82
North End	19	12	95
Central	88	96	73
Roxbury/Matt	100	118	84
Dorchester	145	77	78
Hyde park	26	33	69
J.F.	29	29	83
Roslindale	35	34	88
West Roxbury	92	29	83
Allston/Brighton	46	67	67
South Boston	53	32	87
Total	1894	1500	71

Table 4

Mail Response by Town

Town	Number Mailed	% Return	No. Returned
Melrose	28	50	14
Cambridge	87	54	47
Watertown	30	43	13
Wakefield	17	18	3
Brookline	47	62	29
Winthrop	17	47	8
Revere	43	40	17
Stoneham	11	27	3
Woburn	17	6	1
Winchester	5	0	0
Medford	60	38	23
Malden	13	23	3
Everett	26	4	1
Chelsea	15	0	0
Lexington	15	27	4
Waltham	37	43	16
Arlington	40	58	23
Belmont	20	65	13
Newton	66	38	25
Dedham	23	61	14
Milton	27	48	13
Quincy	80	61	49
Somerville	45	40	18
East Boston	24	33	8
Charlestown	60	40	24
North End	18	39	7
Central	64	36	23
Rox/Matt	84	31	26
Dorchester	123	43	53
Hyde Park	18	44	8
J. P.	24	33	8
Roslindale	31	39	12
W. Roxbury	76	39	30
Allston/B	31	23	7
S. Boston	46	33	15
Total	1350	41	562

Table 5

Some Comparisons with Downtown Crossing Pedestrians

(MIT/BRA survey weighted by number of trips in 3 months to DTC)

	<u>MIT/BRA Survey</u> (percent)	<u>CSI Survey</u> (percent)
<u>Sex</u>		
Male	23	38*
Female	77	62*
<u>Residence</u>		
Boston	54	55
Suburb	46	45
<u>When Shopped</u>		
Weekday	79	73
Weeknight	7	13
Saturday	14	13
<u>Employment</u>		
Employed downtown	47	44
Employed elsewhere	25	21
Not employed	28	35
<u>Income</u>		
LT \$7000	7	15
7-13999	15	14
14-20999	24	24
21-35999	33	26
36000 plus	22	22

Table 5 (cont.)

Some Comparisons with Downtown Crossing Pedestrians

	MIT/BRA Survey (percent)	CSI Survey (percent)
<u>Age</u>		
16-24	12	31
25-34	32	28
35-44	20	13
45-64	22	19
65+	13	9
<u>Mode Taken</u>		
Walk	29	31*
Transit	59	49*
Auto	11	17*
Other	1	3*

* These data come from the 1978 survey and are only for those pedestrians who gave shopping as their purpose for being in the DTC. All of the rest of the data are for the year 1980 and are for all pedestrians in the DTC.

Table 6

Average Number of Visits in the 3 Months
of Feb., March, and April

Group	No. Shopping Trips	No. Respondents
Employed in CBD	7.95	201
Employed in fringe	6.75	38
Employed in Back Bay	5.30	52
All downtown employees	7.31	291
Employed elsewhere in Boston	3.98	133
Employed in Suburbs	2.59	493
All employees	4.44	1002
Not working, live in Boston	4.07	218
Not working, live in suburbs	2.60	466
All not working	3.07	687
All respondents other than downtown Boston employees	2.98	1313
All respondents	3.89	1704

Table 7

**Alternative Shopping Areas to
the Downtown Crossing**

For respondents who have shopped in the Downtown Crossing in the last year, the shopping area where most shopping is done. For those naming Downtown Crossing, the second most used area.

	%
South Shore	27
Chestnut Hill	12
Burlington	10
Dedham Mall	7
Assembly Square	6
Meadow Glen Mall	5
Back Bay	4
North Shore	4
Quincy Market	2
Misc. malls	9
Other downtowns	<u>11</u> 100

Table 8

Comparison of the Last Shopping Trip in the Downtown Crossing
and the Most Used Alternative Mall

When Did Shopping Trip Take Place?

	DTC %	Other Area %
Weekday	73	46
Weeknight	7	29
Saturday	20	25
	100	100

Means of Reaching the Shopping Area

	DTC %	Other Area %
Walk	16	8
Transit	64	11
Auto	19	79
Other	1	1
	100	100

With Whom Did You Shop?

	DTC %	Other Area %
Shopped alone	61	37
Shopped with other adult or child	38	63
	100	100

What Did You Shop For?

	DTC %	Other Area %
Clothing, shoes, or accessories	79	71
Home furnishings	3	10
Books, stationery	4	3
Jewelry, clocks, watches	6	2
Other	9	13
	100	100

Table 9

Characteristics of Respondents

	<u>Respondent's Own Occupation</u> (%)	<u>Chief Wage Earner's Occupation</u> (%)
Professional	34	37
White Collar	4	5
Clerical	5	12
Blue Collar	20	27
Not Working	36	20
	100	100

Total Family Income 1981
(%)

Less than \$6999	4
\$7000 to \$13999	14
\$14000 to \$20999	23
\$21000 to \$35999	36
\$36000 or more	23
	100

Highest Level of Education Completed
(%)

Did not complete highschool	4
Completed highschool	27
Some college	25
Completed college	21
Some graduate work	8
Obtained a graduate degree	15
	100

Age of Respondent
(%)

16-24	11
25-34	28
35-44	18
45-64	28
65+	15
	100

Average number of children under 12 per household:	0.3
Average number of teenagers (age 12-18) per household:	0.3
Average number of adults per household:	2.1
Average number of automobiles per household:	1.3
Average number of employed persons per household:	1.6

Table 10

Rankings of Shopping Areas by Average Rating Scores

Rank	Quality	Variety	Value	Parking	Walk
1.	Chest Hill	S. Shore	S. Shore	Assm Sq.	Chest Hill
2.	S. Shore	Chest Hill	Burl Mall	Burl Mall	Assm Sq.
3.	Burl Mall	Burl Mall	Chest Hill	Chest Hill	S. Shore
4.	Back Bay	DTC	Meadow Gln	S. Shore	Burl Mall
5.	DTC	Back Bay	DTC	Dedham	Meadow Gln
6.	Meadow Gln	Meadow Gln	Assm Sq.	Meadow Gln	Back Bay
7.	Assm Sq.	Assm Sq.	Back Bay	Back Bay	Dedham
8.	Dedham	Dedham	Dedham	DTC	DTC

Table 11

Overall Ranking of Shopping Areas by Average Point Difference with the Downtown Crossing

(Respondents divided 100 points between DTC and their most used alternative area to indicate preference)

1. Chestnut Hill
2. South Shore
3. Burlington Mall
4. Meadow Glen Mall
5. Downtown Crossing
6. Dedham Mall
7. Assembly Square
8. Back Bay

Table 12

Regression to Show Importance of Rating Scores

Dependent variable: Difference in points given to the Downtown Crossing and the most used alternative area (100 points total).

Independent variables: Differences in rating scores for the Downtown Crossing and the most used alternative area on quality, variety, value, parking convenience, and walk environment.

<u>Rating Differences</u>	<u>Regression Coefficient (Importance)</u>	<u>t statistic</u>
Constant	-5.05	-1.38
Quality	6.03	3.74*
Variety	5.88	4.07*
Value	6.91	5.28*
Parking	0.68	0.75
Walk Environment	3.82	4.26*

* 95 % confident that these importances are different from zero.

Table 13

Rating Changes Due to Policy Changes in the Downtown Crossing

Policy	Characteristic	DTC Rating Change
1. Add a high fashion department store such as Neiman Marcus, Saks, or Bloomingdales.	Quality	.94
	Variety	.71
	Value	.26
	Parking	-.26
2. Add a national chain department store such as Penney's or Sears.	Quality	.14
	Variety	.49
	Value	.57
	Parking	-.39
3. Improved maintenance so that the DTC is as clean as the Quincy Market.	Walk	.90
4. Improved security so police presence is highly visible.	Walk	.64
	Parking	.26
5. Addition of a large parking garage so parking is readily available within two blocks at a cost of 50 cents per hour.	Parking	2.87
6. Allowing automobiles back on Washington Street.	Walk	-2.26
	Parking	-.56

Table 14

Summary of Market Share Changes Due to Alternative Policies

Policy	Workers	Others
1. Add a high fashion dept. store	+7%	+15%
2. Add a national chain dept. store	+5%	+10%
3. Improve area maintenance	+2%	+4%
4. Improve area security	+2%	+3%
5. Addition of a large parking garage	1%	3%
6. Allowing autos back on Wash. St.	-6%	-11%

Table 15

Summary of Percentage Change in DTC Market Share
Due to Scenarios

Development Level	% Change in DTC Market Share			
	Maintenance Level		Maintenance and Security	
	No Change			
No change	workers	+0%	workers	+4%
	others	+0%	others	+8%
Add high fashion department store	workers	+7%	workers	+11%
	others	+15%	others	+23%
Add national chain department store	workers	+5%	workers	+9%
	others	+10%	others	+18%
Add both department stores	workers	+12%	workers	+15%
	others	+25%	others	+34%

Table 16
Change in Ratings Due to Different Developments in the DTC

Rating	Lafayette Place Development	High Fashion Dept. Store	National Chain Dept. Store
Quality	+.36	+.63	+.09
Variety	+.40	+.47	+.33
Value	+.28	+.17	+.38
Parking	+1.44		

Table 17

1990 Sales for the Downtown Crossing in 1982 Dollars

Development Scenario	No Change in Maintenance (\$1,000,000)	Improved Maintenance and Security (\$1,000,000)
Lafayette Place		
workers	227	234
others	279	303
total	506	537
Lafayette Place plus high fashion department store		
workers	236	243
others	307	333
total	543	576
Lafayette Place plus national chain department store		
workers	234	241
others	293	318
total	527	559
Lafayette Place plus both department stores		
workers	243	250
others	321	348
total	564	598

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